



CALL FOR PAPERS IEEE Geoscience and Remote Sensing Letter

Special Stream on Explainable Machine Learning for Remote Sensing

Deep neural networks (DNNs) have achieved state-of-the-art performance not only for most computer vision applications but also for many remote sensing tasks. In areas such as scene classification, semantic segmentation, object detection, multi-sensor matching, or image-to-image translation, deep learning has thus become the go-to solution. On the downside, many people consider DNNs a form of black-box solution since their prediction processes, and inner workings are often not well understood. This lack of understanding may lead to biased predictions or a limitation of model performances, in turn leading to erroneous decision-making or a limited model impact on downstream applications. A potential solution to this problem is the introduction of strategies from the field of explainable artificial intelligence (XAI) in order to design models and results which are interpretable by humans and to enhance transparency.

This IEEE GRSL Special Stream calls for XAI contributions to the remote sensing domain. Possible topics include (but are not limited to):

- Transparency (regarding models, design, and algorithms)
- Interpretability and explainability of machine learning models with model-specific and model-agnostic approaches
- Distillation, meta-modeling, surrogate modeling, and emulation techniques for deep neural networks
- Understanding causal inference and reasoning of learned representation models
- Hybrid transparent black-box modeling
- Design of quantitative metrics for evaluating the quality of explanation
- Introduction of domain expertise into deep neural networks
- Architectural concepts such as attention modules, class activation maps, etc.
- Datasets fostering XAI research and benchmarking in the remote sensing context

All submissions will be peer-reviewed according to the GRSS guidelines. Submitted articles should not have been published or be under review elsewhere. Submit your manuscript on mc.manuscriptcentral.com/grsl, using the Manuscript Central interface, and select the “**Special Stream on Explainable Machine Learning for Remote Sensing**” manuscript type.

Schedule

01 June 2022 Submission system opening
31 December 2022 Submission system closing

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